U.S. Department of Transportation
Federal Aviation Administration

Advisory Circular

Subject: SPECIFICATION FOR WIND CONE ASSEMBLIES	**Date:** 7/19/85 **Initiated by:** AAS-200	**AC No:** 150/5345-27C **Change:**	

1. PURPOSE. This advisory circular (AC) contains a specification for wind cone assemblies to be used to provide wind information to pilots of aircraft.

2. CANCELLATION. AC 150/5345-27B, Specification for Wind Cone Assemblies, dated March 19, 1982, is cancelled.

3. PRINCIPAL CHANGES. The following principal changes have been made in this AC:

a. The specification has been revised to provide for full wind cone extension in a 15 knot (28 km/hr) wind.

b. The use of a coated fabric has been added.

4. APPLICATION. The specification contained herein is recommended by the Federal Aviation Administration in all applications involving airport development of this nature. The specification is an acceptable means for compliance with Federal Aviation Regulation (FAR) Part 152 for projects funded under the Airport Improvement Program or with FAR Part 139 where such facilities may be required. Where alternate means are proposed, it must be demonstrated that equivalent levels of performance, safety, and for Federally funded projects, equivalent cost effectiveness, are achieved.

5. METRIC UNITS. To promote an orderly transition to metric units, this specification includes both English and metric dimensions. The metric conversions may not be exact equivalents and until there is an official changeover to the metric system the English dimensions will govern.

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SPECIFICATION FOR WIND CONE ASSEMBLIES

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers fabric wind cones and their supporting structures used at airports and heliports to indicate surface wind conditions.

1.2 Classification.

1.2.1 Types.

L-806 - those mounted on low mass supporting structures (typical assemblies are shown in figure 1)

L-807 - those mounted on rigid supporting structures (typical assemblies are shown in figure 2)

1.2.2. Styles.

Style I - lighted

Styles II - unlighted

1.2.3 Sizes.

Size 1 - 8 feet (2.5 m), for use with Type L-806 and L-807 assemblies.

Size 2 - 12 feet (3.75 m), for use with Type L-807 assemblies.

2. APPLICABLE DOCUMENTS

2.1 General. The following documents, of the issue in effect on the date of application for qualification, form part of this specification and are applicable to the extent specified herein.

2.2 Federal Aviation Administration (FAA) Advisory Circulars.

AC 150/5345-1	Approved Airport Lighting Equipment
AC 150/5345-43	Specification for Obstruction Lighting Equipment
AC 150/5345-45	Lightweight Approach Light Structure

2.3 Federal Standard.

FED-STD 191	Textile Test Methods

(FAA advisory circulars may be obtained from the Department of Transportation, Subsequent Distribution Unit, M-494.3, Washington, D.C. 20590).

(Federal standards may be obtained from General Services Administration offices in Washington, D.C., Atlanta, Boston, Denver, Chicago, Kansas City, New York, San Francisco, and Seattle).

3. REQUIREMENTS

3.1 Environmental Conditions. The wind cone assemblies shall be designed to operate under the following environmental conditions:

a. Temperature. Any ambient temperature between -55°C and +55°C.

b. Wind. Wind speed up to 75 knots (140 km/hr).

3.2 Fabric Cones.

3.2.1 Fabrication. The fabric cone shall be made so it takes the shape of a truncated cone when it is filled with air; be reinforced at all points that are subject to abrasion of flexing against the metal framework; and be designed to allow removal and replacement without the use of special tools or stitching.

3.2.2 Dimensions. The minimum effective length and the throat end opening diameter of the fabric cones are as follows:

a. Size 1 - Eight feet (2.5 m) in length and 18 inches (0.45 m) in throat diameter.

b. Size 2 - Twelve feet (3.75 m) in length and 36 inches (0.9 m) in throat diameter.

The taper of the fabric cone from the throat to the trailing end shall be designed to cause the wind cone to fully extend when exposed to a wind of 15 knots (28 km/hr).

3.2.3 Fabric. Fabric for the wind cone may be made of cotton, a synthetic material, or a blend of the two, and may be coated. If the fabric is not naturally immune to water absorbtion, it shall be treated to become water repellent. Color of cone fabric may be natural (white), yellow, or orange. Color will be specified by the purchaser. The manufacturer must certify that the fabric meets the following requirements:

a. Minimum breaking strength: Warp - 150 pounds (667 N);
Filling - 150 pounds (667 N).

b. Good or better colorfastness as determined by Method 5671 of FED-STD-191.

3.3 Framework. A framework shall be provided to hold the throat of the fabric cone fully open under no wind conditions and to provide an interface with the support. It shall be of low-mass design so as to offer minimum resistance to an inadvertent strike by aircraft. The framework may be made of metallic or nonmetallic material. Ferrous materials shall be hot-dipped galvanized, zinc plated, or epoxy-resin coated to provide protection against corrosion. The framework is to be constructed so as to deter the accumulation of water in the wind cone. The framework shall support the fabric cone in a rigid position for three-eighths of its length. When the fabric cone is attached to the framework the combination shall perform as a wind vane. Bearings, bushings, or like devices shall be either permanently lubricated or provided with fittings to allow periodic lubrication.

3.4 Supporting Structures. Typical supporting structures are shown in figures 1 and 2. Although the illustrations are typical, the dimensions shown are to be complied with.

3.4.1 Type L-806. The type L-806 support shall be of a low-mass design. When firmly anchored, the support shall withstand a moment of 350 pound-feet (475 N m) without damage and fail before a moment of 700 pound-feet (950 N m) is reached by a force applied parallel to and 6 feet (1.8 m) above the surface to which the support is attached. Alternatively, a support meeting the requirements of AC 150/5345-45, Lightweight Approach Light Structure, may be used.

3.4.2 Type L-807. The type L-807 support may be hinged at its base or near its middle so the wind cone and light fixture can be serviced from the ground. When the support is mounted in place, it shall withstand, without damage, a moment of not less than 3200 pound-feet (4340 N m) when the force is applied parallel to and 16 feet (4.8 m) above the surface to which the support is attached.

3.5 Cone Movement. The wind cone shall move freely about the vertical shaft it is attached to and when subjected to wind of 3 knots or more indicate the true wind direction within $\pm$5 degrees.

3.6 Illumination. Style I wind cone assemblies shall be supplied with sufficient light fixtures to provide a minimum of 2 foot-candles (21.5 lux) illumination on any point of the horizontal plane described by the complete rotation of the upper surface of a fully extended cone. Light fixtures shall be placed and aimed to minimize objectionable glare to aircraft pilots. Wiring from the base of the supporting structure to the light fixture shall be housed in the structure or in electrical conduit. Electrical cable shall be of proper type and size for this application.

3.7 Obstruction Light. Optionally, an L-810 obstruction light conforming to AC 150/5345-43, Specification for Obstruction Lighting Equipment, may be supplied. The obstruction light is to be mounted at the highest point of the wind cone assembly to avoid being obscured by any other part when viewed from above.

3.8 Painting. All exposed metal parts of the wind cone assembly, except reflecting surfaces of light fixtures, shall be given one prime, one body, and one finish coat of paint. The prime coat shall be appropriate for the particular metal being painted. The finish coat shall consist of a nonfading orange color paint.

3.9 Equipment Parts and Instructional Manual. A manual shall be supplied with each wind cone assembly containing, as a minimum, the following information:

a. Complete wiring diagram for lighted wind cones.

b. Complete parts list with the name and part number of the original manufacturer.

c. Assembly and installation instructions, including mounting foundation and anchor bolt requirements.

d. Maintenance instructions.

4. QUALIFICATION REQUIREMENTS.

4.1 Qualification Request. Procedures for obtaining qualification approval are contained in the latest edition of AC 150/5345-1, Approved Airport Lighting Equipment.

4.2 Qualification Testing.

4.2.1 General. Each type, style, and size of wind cone assembly for which approval is requested shall be tested.

4.2.2 Wind Cone Attachment. Test the attachment of the fabric wind cone to the metal framework by applying the following tension to the free end of the wind cone:

a. Size 1 - 45 pounds (200 N)

b. Size 2 - 100 pounds (450 N)

Any distress noted in the fabric wind cone or the means of attachment will be cause for rejection.

4.2.3 Support Rigidity. Mount the support on a surface to simulate its normal field installation and apply the following forces to the support. The force shall be applied parallel to and at the specified distance from the surface:

Type	Force		Distance
	Hold	Fail By	
L-806	58 lb. (264 N)	117 lb. (530 N) 1/	6 ft. (1.8 m)
L-807	200 lb. (890 N)	-	16 ft. (4.9 m)

1/ Low mass structures shall cause minimal damage when struck by aircraft. The structure shall not wrap around the aircraft but shall crumple or collapse on impact.

4.2.4 Cone Movement. Test the cone movement around the vertical axis. The cone shall move freely and align with a 3-knot (5.6 km/hr) wind. The wind test shall be run at no less than 6 equally spaced points about the vertical axis.

4.2.5 Illumination. The illumination shall be tested at the throat, trailing end, and center points of the upper surface of the extended fabric wind cone at t 30-degree intervals throughout a complete horizontal rotation of the wind cone. The illumination at the test points shall not be less than the 2 foot-candles in paragraph 3.6.

4.2.6 Cone Extension. Test the wind cone to assure that it extends fully when subjected to a wind of 15 (+2, -1) knots (+3.7, -1.8) km/hr).

4.2.7 Cone Fabric. Supply a certification from the fabric manufacturer that the fabric meets the requirements in paragraph 3.2.3.

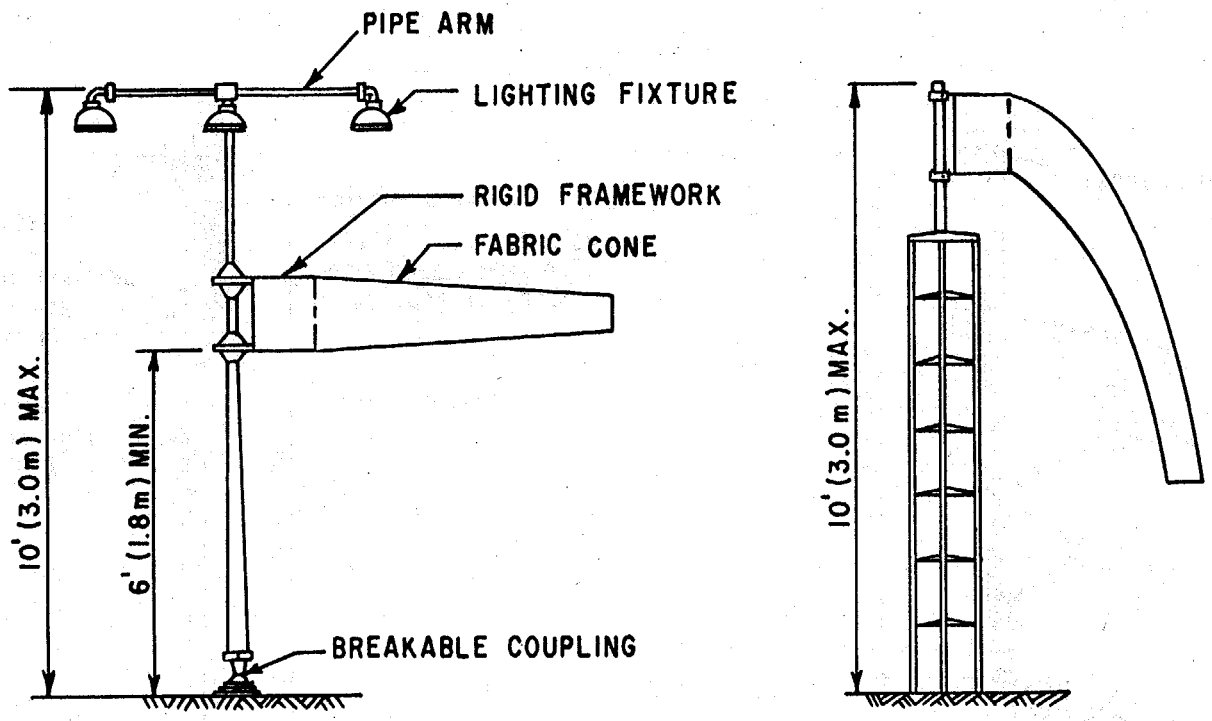

Figure 1. Typical Type L-806 supports.

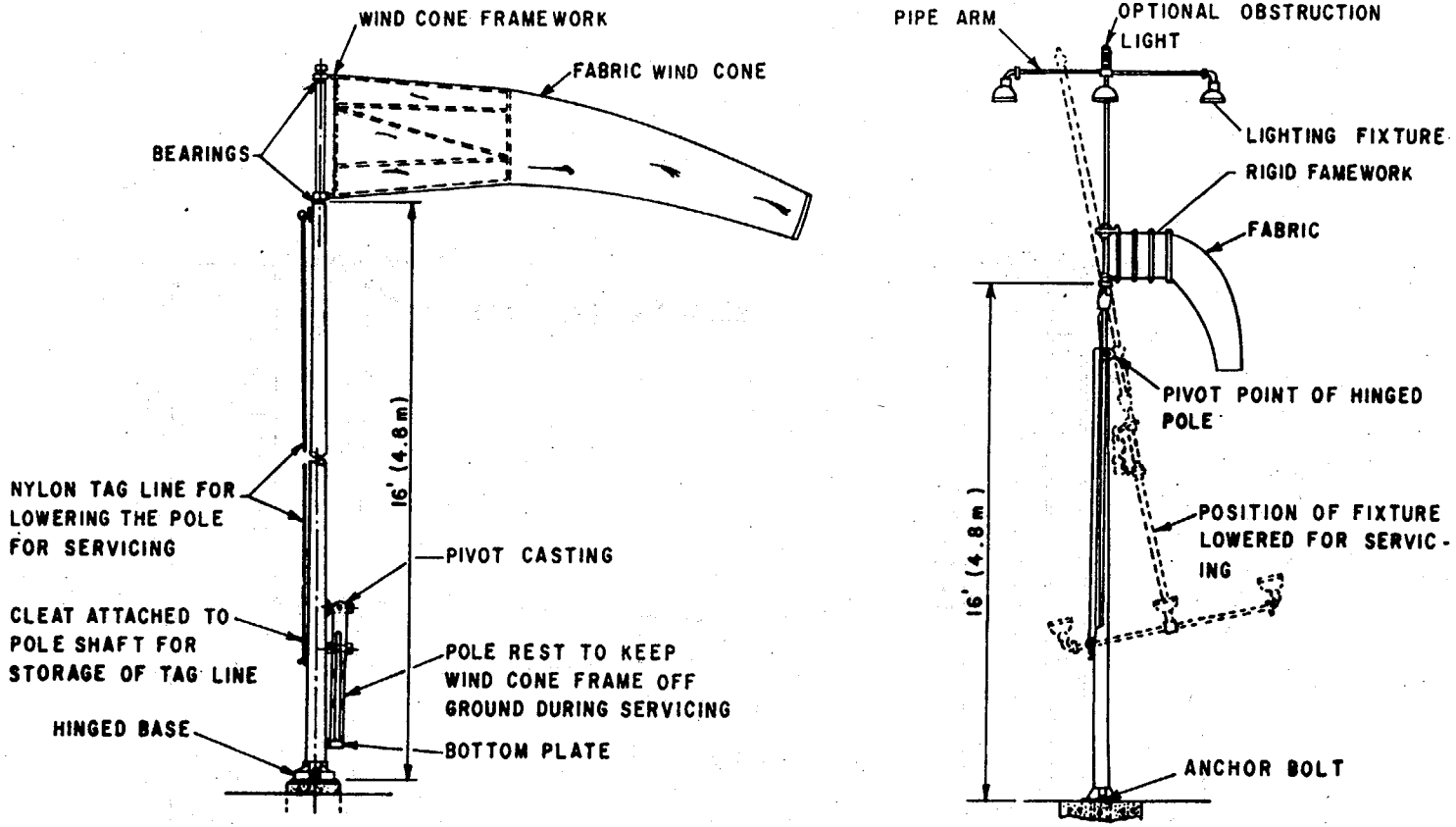

Figure 2. Typical Type L-807 supports.